

## EVALUATION OF TESTIMONY

The Texas Natural Resource Conservation Commission (commission) adopts revisions to the State Implementation Plan (SIP) for the Attainment Demonstration for the Beaumont/Port Arthur (BPA) Ozone Nonattainment Area.

### **Explanation of the Proposed SIP**

The BPA area is classified as moderate, and therefore was required to attain the 1-hour ozone standard by November 15, 1996. The BPA area did not attain the standard by that date, and also will not attain the standard by November 15, 1999, the attainment date for serious areas. In determining the appropriate attainment date for an area, the United States Environmental Protection Agency (EPA) may consider the effect of transport of ozone or its precursors from an upwind area which interferes with the downwind area's ability to attain. On July 16, 1998, EPA issued a guidance memorandum titled "Extension of Attainment Dates for Downwind Transport Areas." The guidance, referred to hereinafter as the "transport guidance," provides a means for EPA to extend the attainment date for an area affected by transported air pollution, without reclassifying ("bumping up") the area to a higher classification. The transport guidance is particularly relevant to BPA, which is downwind of the Houston/Galveston (HGA) area and is affected by transport from the HGA area. If EPA approved such a determination for BPA, the area would have until no later than November 15, 2007, the attainment date for HGA, to attain the 1-hour ozone standard. On April 16, 1999, EPA proposed in the *Federal Register* to allow BPA to take advantage of the transport guidance if an approvable attainment demonstration is submitted by November 15, 1999. This SIP revision contains results of photochemical modeling demonstrating transport from HGA to BPA, and, following EPA's transport guidance, demonstrating that BPA attains the 1-hour ozone standard. In addition, this SIP revision adopts rules for IWW and batch process sources to ensure that

VOC emission limits for these sources meet EPA's guidelines for RACT. With the current SIP revision, the commission is also adopting Phase I NO<sub>x</sub> rules for gas-fired, lean-burn stationary internal combustion engines., to be followed by Phase II rules for the remaining major NO<sub>x</sub> sources. These Phase II rules are scheduled for proposal in mid-December 1999, public hearing in late January 2000, and adoption in April 2000.

### **Hearing and Commenters**

State Senator David Bernsen, Senate District 4, and State Representative Allan Ritter, House District 21, commented that cleaning up the environment and promoting economic development should be mutually compatible goals. An individual urged the commission not to make air quality rules so restrictive that companies would leave BPA, thus jeopardizing jobs in the area.

**The commission is charged with meeting federal air quality standards for ozone and other pollutants in order to protect public health. However, the commission believes that air quality goals can be realized without hampering economic development. Commission staff have met on an ongoing basis with elected officials, as well as representatives from industry, in the BPA area to ensure that reduction requirements are economically reasonable and technically feasible.**

State Representative Joe Deshotel, House District 22, and Honorable Carl Griffith, Jefferson County Judge, stated that voluntary reductions already made by grandfathered industries in the BPA area should be taken into account by the state.

**Voluntary emission reductions already made by grandfathered sources in the area are taken into account in the SIP development process. The benefits of any reductions are reflected by the**

**ambient air monitors in the area. The ambient air monitoring data drives the SIP process.**

**Voluntary reductions are also tracked in the industrial emissions inventories submitted to the commission. The inventories allow reduction achievements and additional reduction needs to be identified in the SIP. Voluntary reductions are also accounted for in the commission's rules. Some of the voluntary reductions already made may be used to offset emissions from future industrial growth in the area.**

Dr. Richard Harrel, representing Clean Air & Water, Inc., commented that air quality improvements are needed in the BPA area, and that the numerous large construction projects underway do not support the contention that the area is suffering economic hardship from environmental regulations. The commenter recommended NO<sub>x</sub> reductions of 8% per year in order to achieve the ozone standard by 2007.

**With the current SIP revision, the commission is adopting Phase I NO<sub>x</sub> rules for lean-burn engines, to be followed by Phase II rules for the remaining major NO<sub>x</sub> sources. These Phase II rules are scheduled for proposal in mid-December 1999, public hearing in late January 2000, and adoption in April 2000. The combined Phase I and II rules will achieve approximately 37% reduction in overall NO<sub>x</sub> emissions. This percentage reduction is less than the 8% per year suggested by the commenter, but is sufficient for an approvable attainment demonstration following EPA guidance.**

The South East Texas Regional Planning Commission (SETRPC) commented that the BPA area has, since the 1990 Clean Air Act Amendments were implemented, effected 15% VOC controls with an additional 9% NO<sub>x</sub> controls to be effected in November 1999. SETRPC stated that additional 24% NO<sub>x</sub> and VOC reductions as proposed in the emission reduction plan will bring total reductions to roughly 50%. SETRPC believes that this level of reductions does not reflect a "free ride," and that these

reductions represent the area's "fair share," considering how much the area is impacted by upwind transport of ozone and ozone precursors. SETRPC recommended that the commission go forward with the 24% reduction plan, and not implement more control than is required by sound science.

**As part of the initial negotiations, a proposed 24% ROP was put forward to meet the requirements of EPA's transport policy. EPA's letter of May 21, 1999 stated that reliance on the 24% ROP alone was not sufficient for an approvable attainment demonstration, and that additional reductions would be required. As a result, the state shifted emphasis from the 24% ROP to the more stringent set of NO<sub>x</sub> reductions to be achieved by rulemaking. This SIP includes the first phase of reductions for what will ultimately required for the attainment demonstration.**

The SETRPC commented that the SIP proposal suggests that a 40% point source NO<sub>x</sub> emission reduction (beyond RACT and in addition to the 24% emission reduction plan) may satisfy the meaning of "all practical applied control measures," but the SIP does not provide the basis for this suggestion.

**The commission staff has worked with EPA to develop acceptable criteria for "all practical control measures." The current understanding is that Tier I controls, which consist of precombustion controls such as low-NO<sub>x</sub> burners and flue gas recirculation, represent such practical control measures. The modeling shows that a reduction of approximately 40% from the 2007 future base case point source inventory would bring ozone concentrations closer to modeled attainment, although this would not actually result in attainment. The "40% scenario" includes NO<sub>x</sub> reductions that were part of the original 24% scenario.**

An individual noted that the commission's modeling does not predict attainment, and that the agency

cannot rely upon the future design value approach to show attainment.

**It is correct that the photochemical modeling of the Tier I scenario does not show a maximum modeled ozone concentration below 125 ppb over the entire domain. However, EPA's guidance on attainment demonstrations and weight of evidence application was applied in this case, as discussed in Appendix P of the SIP. This appendix is available upon request to the commission's SIP modeling staff.**

SETRPC commented that the emphasis of the recommended control strategy is the September 8-11, 1993 episode or locally generated ozone episode, which is the least frequent type of episode in the BPA area. SETRPC provided data for exceedances from the past three years, which are the determining years in defining the attainment status for BPA. By conducting data and meteorological analysis, the exceedances are categorized as either a locally generated exceedance or a transport induced exceedance. SETRPC claimed that the data show that 86% of the exceedances are due to transport and only 14% of the exceedances are due to locally generated ozone.

**The commission disagrees with the assertion that 86% of all ozone episodes in the BPA area over the last three years are due to transport. The commission's analysis of air quality and meteorological data shows that roughly 50% of the exceedances in BPA are due to transport.**

SETRPC commented that, besides concentrating on a episode that only occurs about 15% of the time, another measure of severity of a modeled episode is the design value. SETRPC provided data to show that the monitored exceedances on the modeled episode days (September 2 and 10) were significantly higher than the area's design value. The commenter stated that, in fact, the monitored exceedance on

September 10 (141 ppb) is almost twice the distance to the goal of 125 ppb than the current design value of 133 ppb.

**The commenter is referring to the BPA area's current design value. The design value for the September 8-11, 1993 episode was 136 ppb (based upon 1992-1994 data), which is much closer to the monitored exceedance on September 2, 1993 (137 ppb), and only 5 ppb below the September 10, 1993 exceedance. Future design value calculations are made with the design value for the 3-year time period that straddles the episode, which in this case is 1992-1994.**

SETRPC commented that another variable that can be used in the weight of evidence analysis is trend data. SETRPC provided data to show the projected emission trends from 1990 to 2007 with the application of Scenario 5b. Based on current emission trends and application of Scenario 5b, the commission projected that area-wide NO<sub>x</sub> emissions in 2007 will be down 26% from 1990 levels and area-wide VOC emissions will be down 48%. This totals out to be roughly a 74% reduction in emissions. That is quite a large reduction for a moderate nonattainment area. These projections do not include additional controls on utility NO<sub>x</sub> emissions mandated by the 76th Legislature in Senate Bill (SB) 7.

**Emission reductions due to the implementation of SB7 were not explicitly included in modeling the BPA 3-county area for the BPA SIP revision. However, a 50% reduction in utility NO<sub>x</sub> was assumed for electrical generating units located outside both the BPA and HG nonattainment areas. It should also be noted that while a 26% reduction in area wide NO<sub>x</sub> plus a 48% reduction in area-wide VOC may add up to a roughly 74% reduction in emissions, this total reflects two separate pollutants. Photochemical modeling indicates that at least a reduction of 39.5% in 2007 point source NO<sub>x</sub> is needed. Moreover, additional BPA modeling was conducted after banked and**

**shutdown emissions were added back to the modeling inventory.**

SETRPC commented that EPA has raised concerns about the 1995 ozone exceedances. The SETRPC AQAC conducted an in-depth meteorological analysis and determined that 1995 was an anomaly when compared to 1990-1994 and 1996-1998. EPA staff stated that representative data should be used when looking at trend data and future year design value calculations, and SETRPC agrees. 1995 is not representative and should not be used when describing trends or design values. By looking at 1990 (time of Clean Air Act Amendment designations) to the current year, a 10-year trend can be observed in its entirety. The commission should not concentrate on a 1-year anomaly.

**A debate over whether a given year is “representative” of a longer period hinges on the test used to classify each year. Using the count of monitored exceedance days, the 17 exceedances at Sabine Pass in 1995 appear to be an anomaly. However, the agency monitoring sites in Beaumont, Port Arthur, and West Orange, and the SETRPC Jefferson County Airport and Mauriceville sites had exceedance counts similar to 1991. The agency’s Beaumont and Port Arthur sites did have the maximum number of 8-hr exceedance counts in 1995 for the 1986 through 1998 period, providing further evidence that 1995 was a bad year for ozone. (The commission does not have access to the all of the SETRPC ambient data, and thus cannot assess 8-hour exceedance counts or 1-hour peak values exceeding some other threshold, or other potential statistics such as the mean or median daily maxima over the summer months.)**

**In traditional statistical parlance, an event might be classified as unusual if it appears only one time in twenty. With only 10 years of data at Sabine Pass, we do not have enough data to dismiss it as an outlier in terms of exceedance counts. Using the same 10 year period to evaluate the agency sites,**

**1991 and 1995 represent 20% of the observed years, so they cannot be dismissed as outliers in terms of exceedance counts.**

SETRPC commented that another variable to be used in the weight of evidence is the elevated background caused by the upwind area not being in attainment. The modeling of the September 8-11, 1993 episode was mainly done for the HGA area. The modeling of the August 31, 1993- September 2, 1993 episode was mainly done for BPA. When modeling was performed for the BPA August 31, 1993- September 2, 1993 episode, the HGA area was brought into attainment and the 24% controls in BPA (Scenario 5b) were subsequently evaluated as to whether the maximum in BPA was below the benchmark. The September 8-11, 1993 episode does not have the Houston area in attainment and this elevates the ozone levels in the BPA area. TCC urged the commission to consider modeling the BPA area with boundary conditions showing the HGA area in attainment.

**A complete description of what is considered attainment for HGA was not defined at the time that the BPA SIP revision was submitted. Subsequent discussions with EPA have defined the control levels for HGA, and these will be reflected in follow-up modeling for BPA (Phase II), which will be submitted to EPA in late April 2000. In addition, September 10, which is the controlling day for this episode, has a minimal effect of transport from Houston. Even with minimal effect, and Tier I controls in BPA, the deterministic modeling attainment test could not be passed.**

SETRPC commented that Scenario 5c does not take into account the full realm of controls in the HGA attainment demonstration plan, which is referred to as Control Scenario VI<sub>f</sub>. Consequently, since the difference between 5b and 5c results are due to changes in Houston, by applying more controls in Houston with Scenario VI<sub>f</sub>, the modeled maximum in the BPA area would still be smaller than the results



in Scenario 5c. In fact, the AQAC conducted a CAMx simulation with Scenario VI in the HGA domain and 5b in the BPA domain and the modeled maximum onshore ozone is 123.9 ppb, less than that maximum ozone from scenario 5c. This further illustrates that even though this is a locally generated episode, the ozone in BPA is still impacted by emissions and controls in HGA.

EPA has informed the commission that some of the modeled controls in Scenario VI, particularly the assumed 50% reduction in nonroad mobile source emissions and accelerated onroad vehicle fleet turnover, are not acceptable. The commission has recently redefined the suite of attainment controls for HGA and has remodeled for HGA. This same suite will also be used to remodel BPA for the follow-up (Phase II) modeling, which will be submitted to EPA in Spring of 2000.

SETRPC commented that Equilon Enterprises, which serves as a technical advisor to the AQAC, performed ozone source apportionment modeling using the CAMx OSAT [Ozone Source Apportionment Technology] routine (Environ, 1997). According to the 1996 EPA Guidance Document, ozone source apportionment is a tool that can be used in weight of evidence analysis.

According to Equilon, the results of the OSAT modeling indicate that roughly 10 to 20% of the ozone in the BPA domain during the September 8-11, 1993 episode was produced by local anthropogenic emissions. Consequently, about 80% to 90% of the ozone production is due to boundary conditions, biogenic emissions, and HGA anthropogenic emissions. SETRPC provided data illustrating that on average, non-BPA anthropogenic emissions have just as much, if not greater, impact on the ozone production in the BPA nonattainment area than the local BPA anthropogenic emissions. The OSAT calculations are also calculating that BPA anthropogenic emissions contribute about 20% to the offshore peak area being calculated on September 10.

**Equilon's conclusion that 10 to 20% of BPA's ozone is due to local emissions is similar to what the commission has seen when executing OSAT for the DFW SIP. That is, it is normal for a specific urban area to be significantly impacted by regional emissions, boundary conditions, and especially biogenic emissions. Figure 13 in SETRPC's comment letter should be redone to show the contribution among sources for each day of the episode, particularly September 10, 1993 . Another problem in inferring contributions from this CAMx simulation is the relative distance from the BPA area to the edge of the COAST(inner) domain. On September 11, emissions from within BPA leave the COAST domain, and return as boundary conditions. Unfortunately, the regional boundary conditions were originally modeled with just the 2007 future base case emissions, which would tend to overstate the case for boundary condition impacts on September 11, and in turn, affect the regional average for the entire episode.**

The Texas Chemical Council (TCC) stated its concern that the predicted modeling results are not validated by the monitored data. In fact, the models overpredict the actual monitored episodes, resulting in recommendations for overcontrol.

**Although the model may be overpredicting the maximum ozone concentrations with respect to monitored values for some combinations of days/hours and stations, the model's base case performance is well within EPA model performance criteria and is considered acceptable. In fact, the model's base case performance on 9/10 (the controlling day) is excellent.**

TCC recommended that the commission account for the biases in the model and the selection of modeling parameters by maximizing flexibility in control options and implementation timeframes.

**The commission did account for model biases by using the future design value weight of evidence technique. This ties actual monitored design values to relative model response to particular control strategies.**

Brown McCarroll & Oaks Hartline, L.L.P., on behalf of DuPont, commented that additional modeling incorporating the currently proposed HGA area control scenarios demonstrates that the BPA area would be in attainment with the 1-hour ozone standard. Specifically, if monitored exceedances due to transport had been eliminated in the September 8-11, 1993 episode, the BPA area would be in attainment.

**Although BPA has been remodeled with HGA at Scenario VI as a sensitivity, EPA has indicated that some of those assumed controls, particularly arbitrarily cutting nonroad mobile source emissions by 50%, and using an accelerated onroad vehicle fleet turnover (2015 to 2007), are not acceptable. The commission has since revised its most stringent control scenarios for Houston, and has run additional BPA scenarios with HGA at those levels for both this SIP revision and the Phase II BPA SIP revision. The results of the additional modeling for the current SIP revision are found in Chapter 3.**

Brown McCarroll & Oaks Hartline, L.L.P., on behalf of DuPont, commented that the CAMx model overestimates the ambient ozone concentrations for the BPA area in both episodes, based on calibrations with actual observed values. The highest and second highest model-calculated ozone concentrations for the 1993 base case area 165 ppb on September 8, and 162 ppb on September 11. However, the model performance evaluation study shows that the 1993 baseline modeling analysis overpredicted the ambient ozone concentrations by more than 20 ppb for the high ozone hours at all monitored locations. A 20 ppb overprediction is approximately 50% of the ozone reduction (from 165 ppb to 124 ppb) that must be

achieved in the modeling analysis. This overestimation doubles the reduction of modeled ozone concentration required to demonstrate attainment with the standard.

**September 8 is not being used as an episode day because (1) it was not a monitored exceedance day in BPA and (2) model base case performance was outside EPA acceptability bounds on this day. Similarly, September 11 was not an exceedance day in BPA, although model base case performance was within EPA criteria for this day. Base case model performance for September 10 (the controlling day), which was an exceedance day for this episode in BPA, was excellent. Therefore, the commission has more confidence that the modeled strategies will reduce ozone and help assure that BPA will attain the standard.**

Brown McCarroll & Oaks Hartline, L.L.P., on behalf of DuPont, commented that the 1993 baseline emissions inventory for NO<sub>x</sub> may be artificially inflated due to incorrect emission factors and more conservative (high) emission calculation methods than are now accepted. This may also cause overpredictions of the ozone concentrations. The commenter stated that it is imperative that the commission use the best science possible in determining what additional reductions, if any, are necessary to demonstrate attainment. DuPont is willing to work with the commission in pursuing upgrades to the model data in order to generate scientifically valid results, but these corrections must be addressed prior to developing any future strategies.

**The 1993 base case inventory was based upon data collected during the COAST study, in which companies reported their actual emissions to the commission. In addition, although emissions may be overestimated, one can argue that this can help bolster the state's weight of evidence argument. That is, the commission has more confidence that the modeled strategies will help the area to attain**

**the standard.**

Brown McCarroll & Oaks Hartline, L.L.P., on behalf of DuPont, commented that the AQAC WOE demonstration incorporates additional benefits mandated by the Texas legislature (SB7) and other emissions reductions not accounted for in the models (e.g. HGA area controls), air quality trends, and the severity of the modeled episodes.

DuPont notes that reductions achieved by SB7, in particular, will be enforceable and real reductions. The reductions are already mandated by state law, thus the costs will be born regardless of whether they are included in a SIP. As these costs will be passed on to industrial and other electric utility consumers under the provisions of SB7, DuPont believes it is not only appropriate, it is imperative as a matter of fairness and equity, that the commission include electric utility emission reductions in the SIP, because these costs will be born by electric utility customers.

**Emission reductions due to the implementation of SB7 were not explicitly included in modeling the BPA 3-county area for the BPA SIP revision. However, a 50% reduction in utility NO<sub>x</sub> was assumed for electrical generating units located outside both the BPA and HG nonattainment areas. In addition, scenarios 2 and 4 for the HGA SIP revision, did assume 50% reduction in utility NO<sub>x</sub> for the BPA area. The industries in the BPA area have been given an opportunity to develop their specific control strategy in a manner that is flexible and most cost effective and that also meets the goals of TNRCC and EPA. Therefore, specific control strategies/rules were not modeled.**

Brown McCarroll & Oaks Hartline, L.L.P., on behalf of DuPont, commented that EPA Region 6 approved the Baton Rouge, Louisiana SIP which accounted for model overprediction before imposing

additional control measures beyond the 15% and 9% rate of progress reductions. After the overprediction was accounted for, the Baton Rouge episode modeling still exceeded the benchmark. Nevertheless, EPA accepted a limited WOE argument to account for the exceedance. DuPont suggests that the WOE demonstration by the Southeast Texas industry group is more comprehensive and results in a higher rate of progress that the adopted in Baton Rouge SIP and demonstrates attainment without the need for additional control measures beyond the commission's current proposal for a 24% reduction in NO<sub>x</sub> and VOC emissions.

DuPont understands that EPA is proposing a different process for the Texas SIP that would not allow for such a correction. The commenter believes that EPA's position is unreasonable in light of its action on the Louisiana and other state SIP approvals. The commenter urged that the commission reconsider the June 30 proposed SIP revision by correcting the model bias, and applying the WOE argument before considering any further controls in the BPA area.

**The commission notes that the controlling day for the September 8-11, 1993 episode for BPA is September 10. On this date, model performance was outstanding and not biased high. Attainment could not be modeled on September 10, even with the application of Tier I controls. Model bias, therefore, is not an issue.**

Entergy and Equistar commented that it believes that the modeling results in the SIP conclusively demonstrate that the 24% emission reduction plan proposed to the commission by the Southeast Texas Plant Manager's Forum in an April 1, 1999 letter, in combination with other Clean Air Act mandates already in place, is more than sufficient to attain the 1-hour ozone standard. The commenters also contended that the commission would have arrived at the same conclusion had they 1) accounted for

biases in the model predictions and conducted weight of evidence analyses; 2) modeled the full extent of HGA controls to be implemented as part of the HGA attainment plan; and 3) taken full account of information provided in Appendix P of the commission SIP proposal: Future Design Value Calculations of the BPA Attainment Demonstration Proposal.

**Model biases are implicitly accounted for in the Future Design Value approach. The full extent of the HGA controls have only recently been identified and will be included for modeling that the commission does for the Phase II BPA SIP revision. Although it would appear that the Future Design Value calculations in Appendix P show that attainment could be expected with scenario 5b, EPA has made it clear to the commission that because modeled attainment was not reached with 5b, additional levels of control would need to be modeled. Even though 5b plus Tier I point source controls still did not show modeled attainment, EPA believed that the results were close enough to the standard to enable the state to use weight of evidence arguments - the Future Design Value methodology. Although the commission is using Future Design Value as a weight of evidence argument, it should also be noted that another WOE argument is the agreement on what additional practicable controls for BPA are, i.e. Tier I precombustion controls. EPA's position is that if modeling does not show attainment, additional, practicable controls must be applied. There is a dramatic difference in practicable and reasonable when looking at Tier I precombustion controls versus Tier II post-combustion controls. Future Design Value calculations, in and of themselves, are not the sole determinant in the commission's WOE argument, nor should they be.**

Mobil Oil Corporation (Mobil) commented that the transport of man-made ozone and its precursors from the upwind nonattainment area of HGA is a significant cause of nonattainment episodes in the BPA area. There is an apparent disconnect between the commission's reliance on the September 8-11, 1993

modeling episode and the failure of this modeled air violation episode to account for the projected achievement of the ozone standard for the HGA nonattainment area. It appears inconsistent for the state to require emission reduction programs to be instituted in Houston, and then fail to account for the projected emissions reduction when modeling the affected downwind area of BPA.

**Although BPA has been remodeled with HGA at Scenario VI as a sensitivity, EPA has indicated that some of those assumed controls, particularly arbitrarily cutting nonroad mobile source emissions by 50%, and using an accelerated onroad vehicle fleet turnover (2015 to 2007) are not acceptable. The commission has since revised its most stringent control scenarios for Houston and will run another BPA scenario with HGA at those levels for the Phase II BPA SIP revision.**

Mobil commented that it appears inconsistent to fail to acknowledge and account for the documented conservative biases in the existing models that result in a “high bias” to the predictive models. Essentially the models predict a higher level of ambient ozone than what actually results during these episodes. Other ozone nonattainment areas of the country have fully corrected for the overprediction bias when they have submitted their SIPs to the EPA. This should be done for the BPA area also.

**The commission is not aware of the “documented conservative biases in the existing models” to which the commenter is referring. EPA has a prescribed set of model base case performance measures that are used to discern whether the model does a reasonable job of replicating episodic ozone concentrations. Since there is a range of over- to underprediction, it is reasonable to expect that the model may overestimate concentrations for some episodes/days. It is for the overestimation cases that states may take advantage of weight of evidence techniques, such as the Future Design Value approach, which was described in Appendix P. This technique implicitly accounts for model**



**overprediction.**

EPA stated its concern over the commission's assumption that start-ups and shutdowns from the period 1990-1996 were considered indicative of future growth in the area. EPA's concerns stemmed from the banking of some of these shutdown emissions and the possible future return of the emissions to the atmosphere, the failure of banked shutdown emissions to meet the federal definition of "surplus," and the use of the same growth trend across all source categories. AICHE and an individual also expressed concerns about the process used to estimate emission growth to 2007.

**TNRCC remodeled the future base case and control case scenarios to account for banked emissions. This was done by modifying the growth rate applied to NO<sub>x</sub> point sources in the BPA area. The methodology for revising the point source NO<sub>x</sub> growth factor is provided in Appendix A to this SIP.**

EPA commented that in conducting the attainment modeling for the BPA area, assumptions have been made about the level of emission reductions in HGA. In Appendix O, Evaluation of Control Strategies for the BPA Area, it appears to indicate that the 50% NO<sub>x</sub> reduction to all nonroad sources, the 50/30% NO<sub>x</sub> reductions on utility/non-utility sources in the Central and East Texas area, and the NO<sub>x</sub> SIP call-generated boundary conditions are included in Scenario 5b1. EPA expressed concerns that these NO<sub>x</sub> reduction levels used for HGA are overly optimistic, and do not appear to be part of any rule package.

**The 50% nonroad NO<sub>x</sub> reduction for HGA has recently been revised and will be incorporated in new modeling for BPA. The 50/30% NO<sub>x</sub> reductions for utility and non-utility grandfathered sources is an early estimate of the reductions that will occur as a result of Senate Bill 7 and Senate Bill 766.**

EPA commented that the overall result of the revised biogenic emissions for the nonattainment area resulted in an increase in biogenic emissions. The net result of the revised biogenic inventory has been added to the wealth of isoprene to the degree that the model is generating peak hourly isoprene concentrations of questionable magnitude, since they are higher than typically measured (i.e., 130 ppb vs. 70 ppb-C). This could result in higher than anticipated background levels in the modeling domain.

**The biogenic emissions inventory for southeastern Texas was developed with technically sound methods. The commission used a well-accepted biogenic emissions model, BIOME, which uses the same emission algorithms and emission factors as the official EPA model BEIS-2. BIOME's principal advantage over BEIS-2 is that it allows the use of locally-derived land use, leaf biomass density, and vegetation distribution data. These data are not very different from the BEIS-2 default vegetation data for forested rural areas, but in areas dominated by crops, rangeland, or urbanization, the local vegetation data are more accurate. In these non-forested areas, the vegetation data are based upon recent local field surveys and recent interviews with agricultural extension agents and urban foresters, rather than default national values.**

**The inventory created by these methods is as accurate as the current state of model and emission factor development allows. If EPA can demonstrate better methods for calculating biogenic emissions, the commission is willing to consider them.**

EPA commented that Scenario 5b1 simulates a maximum ozone concentration value of 129 ppb in the modeling domain, which is greater than the NAAQS of 124 ppb. The state supports this modeling scenario with a WOE analysis to demonstrate that the modeled level of control measures will likely result in monitored attainment. There have been discussions presented to the EPA that, by limiting the modeled

attainment demonstration to only the on shore portion of the domain, where lower maximum ozone concentrations are simulated on September 10 of the episode, a scenario such as 5b (with a lower level of control measures) would be an acceptable attainment demonstration. Although Scenario 5b results in maximum modeled ozone concentrations at 128 ppb on-shore, the maximum off-shore ozone concentrations reach 136 ppb.

**The commission does not plan to limit proposed controls to scenario 5b. It should be noted that when modeled values were selected from the 9 x 9 array of cells around each monitor (for the Future Design Value calculations), the Sabine Pass monitor's 9 x 9 array of cells extends out into the Gulf of Mexico. Therefore, for the Future Design Value calculations, the commission did account for modeled maxima that may have occurred offshore.**

EPA commented that, due to the year to year variability of the design value in the BPA area, the Relative Reduction Factor (RRF) method needs to incorporate the use of design values from more than 1 year. This approach is consistent with approaches taken in other areas where the RRF analysis has been used (New York, Philadelphia, Baltimore). The episodes modeled for this attainment demonstration occurred in 1993, which has a relatively low one-hour ozone design value (136 ppb) compared to the 1992 (144 ppb) and 1994 (158 ppb) design values. Since a WOE analysis needs to provide compelling evidence that the level of controls being proposed will bring the area into attainment, it seems that using the three design values for the years 1992 through 1994 is warranted, and strengthens the WOE. As indicated in EPA's Guidance on Use of Modeled Results to Demonstrate Attainment of the Ozone NAAQS, if a particular type of WOE (e.g., trends) is not used, the reasons for not using it are to be documented. Texas should use the evidence of the trends or provide compelling evidence why the use of the trends is not needed.

**The commission believes that the approach used, that of using the design value for the year of the episode, is correct and reflects the original guidance in EPA’s draft guidance document entitled *“Use of Models and Other Analyses in Attainment Demonstrations for the 8-Hour Ozone NAAQS (Draft)(1998)”*.**

EPA commented that the state proposed 2007 as the attainment date in the local control strategy modeling. Proper application of the July 1998 transport policy directs the state to establish an expeditious date that is appropriate in light of the schedule for achieving the necessary upwind reductions from the Houston area that are affecting the BPA area, but no later than Houston’s attainment date. Furthermore, the state must show that the expected date by which the combinations of implemented control measures in both HGA and BPA will bring the BPA area into attainment of the one-hour ozone standard is as expeditious as practicable.

**One of the criteria for approval under EPA’s transport policy item is that the area “(h)as provided that it will implement all adopted measures as expeditiously as practicable, but no later than the date by which the upwind reductions needed for attainment will be achieved.” The commission interprets this to mean that implementation of adopted measures in downwind areas is required no earlier than that for upwind areas. In the approach developed for states subject to the Ozone Transport Assessment Group NO<sub>x</sub> SIP call, for example, an affected downwind area would not be required to attain the one-hour standard until necessary reductions have been made in the upwind area(s). The commission believes that this approach is particularly relevant to the HGA/BPA transport issue, since the reductions required for attainment in HGA are closely tied to BPA’s ability to attain. Therefore, by coordinating the BPA compliance schedule with that of HGA, the commission concludes that attainment will be achieved as expeditiously as practicable, as required**

**by the transport policy.**

An individual stated that the BPA area is not impacted by transport from Houston, but rather from another source of pollution. The commenter did not identify the source of pollution.

**All evidence available to the commission conclusively shows that transport from the Houston/Galveston area is the main outside influence on BPA's air quality. The commenter is welcome to furnish any additional information for the commission's review.**

EPA questioned the changes to the 1990 Base Year Inventory for on-road mobile sources, which changed from 41.09 to 42.33 tons per ozone day (tpod) NO<sub>x</sub>.

**The commission contracted with the Texas Transportation Institute (TTI) to recalculate the base, adjusted base, current control, and 2007 control strategy inventories using a single, internally consistent method. The emissions decrease, about 1.3 tpod NO<sub>x</sub>, is explained by volume to capacity ratios used in the speed model post-processor, since the total vehicle miles of travel did not change.**

EPA questioned why the 1990 Base Year Emissions Inventory for nonroad mobile source NO<sub>x</sub> changed by approximately 50% (60.72 to 33.32 tpod NO<sub>x</sub>).

**The 1990 Base Year Emissions Inventory relied upon a Booz-Allen report to estimate emissions from commercial marine sources. During the COAST study, however, the methodology was significantly revised by staff, resulting in a dramatic "paper" reduction in this source category. The new commercial marine study used the Corps of Engineers trips and drafts data, as well as a**

**geographic information system to allocate the emissions to specific counties. This revision corrects the previous overestimate in the inventory.**

EPA commented about the response of the model to application of Stage I controls in certain areas in East and Central Texas.

**The commission agrees with this comment. The focus of the present modeling is to demonstrate attainment in the BPA area. The response to controls in central Texas, and specifically Austin and San Antonio, will be addressed in SIPs for those areas, should they be required.**

EPA commented that the state must show that it has the statutory authority to adopt, implement, and enforce all of the modeled control measures.

**The only state-initiated measures that were modeled for the BPA area involve NO<sub>x</sub> reductions from stationary point sources. With all SIP revisions, the commission submits to EPA a commission order specifying that the commission has the statutory authority to take the SIP action in question.**

EPA commented that any changes to the mobile source emissions inventory must have adequate public notice and comment in order to meet federal criteria for SIP revisions and conformity budgets. EPA added that for any additional information submitted by the state, which does not meet Federal Clean Air Act (FCAA) requirements for public notice and comment, EPA must find those new portions incomplete.

**The onroad mobile source VOC and NO<sub>x</sub> budgets contained in the proposed SIP were placeholders, and have been replaced with TTI's recalculated data in the adopted SIP. The differences are minor**

(decrease of 0.34 tpod for VOC, increase of 0.73 tpod for NO<sub>x</sub>). The revised mobile source budgets were included in new modeling, conducted after the close of comment period, at EPA's request. This modeling shows that with implementation of Tier I NO<sub>x</sub> controls, the BPA area can attain the standard, taking transport and WOE arguments into account. Immediately after adoption of the current SIP, the commission commits to follow up with Phase II rules for the final BPA attainment demonstration. Any revisions to the mobile source inventory will be subject to public comment at that time. The next SIP revision, to be submitted to EPA by late April 2000, will meet FCAA criteria for conformity budgets.